

Listing of Claims:

1. (Currently Amended) An optical flow cell, comprising:
a two-piece shell formed from separate first and second portions, said portions each having an inner surface providing a bonding channel adapted to receive a bonding material for joining said first and second portions together, having a first portion and a second portion, wherein said first portion provides a light entry aperture, and said second portion provides an imaging aperture;
an inlet tube and an outlet tube retained between said first portion and said second portion; and
a viewing assembly retained between said first portion and said second portion, wherein said viewing assembly includes a reference plate and a flow channel, said flow channel fluidly communicating with said inlet tube and said outlet tube.
2. (Original) An optical flow cell according to claim 1, wherein said reference plate extends from said shell, and serves as a repeatable reference point to properly position the optical flow cell.
3. (Currently Amended) An optical flow cell according to claim 1, wherein said reference plate is separated from a sealing plate by bonding strips, said flow channel being formed between said bonding strips[[],].
4. (Currently Amended) An optical flow cell according to claim 1, wherein said first portion and said second portion each include viewing assembly channels adapted to accommodate said viewing assembly, when said viewing assembly is retained between said first portion and said second portion.
5. (Original) An optical flow cell according to claim 1, wherein said first portion includes an inlet tube receiving notch and an outlet tube receiving notch and said second portion includes an inlet tube receiving notch and an outlet tube receiving notch, and when said inlet tube and said outlet tube are retained within said shell,

said inlet tube is positioned between said inlet tube receiving notches and said outlet tube is positioned between said outlet tube receiving notches.

6. (Currently Amended) An optical flow cell according to claim 1, wherein said inlet tube has a circular cross section, said outlet tube as has a circular cross section, and said flow channel has a rectangular cross section, said first portion and said second portion configured to smoothly transition flow of a sample fluid material between said first outlet tube and said flow channel and between said flow channel and said second outlet tube.
7. (Original) An optical flow cell according to claim 6, further comprising a first channel provided on said first portion, and semi-cylindrical transition notches oppositely oriented on either side of said channel, a second channel provided on said second portion, and first specially-configured transition notches are oppositely oriented on either side of said second channel, said specially-configured transition notches each including a tapered portion, and said semi-cylindrical transition notches and said first specially-configured transition notches opposed to one another on either side of said channel when said optical flow cell is assembled.
8. (Currently Amended) An optical flow cell according to claim 7, wherein second specially-configured ~~transitions~~ transition notches are provided adjacent said second semi-cylindrical transition notches on said first portion, said second specially-configured transition notches opposing a plate of said viewing assembly when said optical flow cell is assembled.
9. (Currently Amended) An optical flow cell, comprising:
 - ~~a shell having~~ a first portion ~~and a second portion~~, wherein said first portion provides a light entry aperture[[, and]];
 - a second portion, wherein said second portion provides an imaging aperture;
 - an inlet tube and an outlet tube retained between said first portion and said second portion; and

a viewing assembly retained between said first portion and said second portion, said viewing assembly including a reference plate and a flow channel, said flow channel fluidly communicating with said inlet tube and said outlet tube, wherein said inlet tube has a circular cross section, said outlet tube as a circular cross section, and said flow channel has a rectangular cross section, said first portion and said second portion configured to smoothly transition flow of a sample fluid material between said first outlet tube and said flow channel and between said flow channel and said second outlet tube,

said first portion and said second portion mate with one another to capture said inlet tube, said outlet tube and said viewing assembly therebetween.

10. (New) An optical flow cell according to claim 1, wherein at least one of said first and second portions have at least one flow aperture adapted to receive the bonding material which is directed into one of said bonding channels.
11. (New) The optical flow cell according to claim 9, wherein said first portion includes at least one rail set.
12. (New) The optical flow cell according to claim 11, wherein said second portion includes at least one ridge set, said ridge set configured to receive said at least one rail set of said first portion.
13. (New) The optical flow cell according to claim 12, wherein at least one of said first portion and said second portion contains at least one aperture configured to receive bonding material.
14. (New) The optical flow cell according to claim 13, wherein said portion containing said at least one aperture includes at least one bonding channel adapted to receive bonding material therefrom.